

Whether Trout will permanently succeed in Hindoostan, has yet to be ascertained. None of the Salmonidæ have been discovered south of the Hindoo Koosh, whence Griffith brought specimens.

I may here mention that, having received the collection of fish made by the late Dr. Stoliczka in the recent expedition to Yarkand, I do not find a single specimen of Salmonidæ contained therein; one Siluroid, and the rest Cyprinidæ, comprise the whole.

On some of the Fishes of the Deccan.

By FRANCIS DAY, Surgeon-Major, F.L.S.

[Read April 6, 1876.]

HAVING received from Dr. A. F. Dobson, of the Madras Medical Service, about 170 fishes collected from the Kistna and its tributaries near the Nizam's station of Hingolie, in the Deccan, as well as a few others from a tank near Bellary, I have thought it might be worth while to offer a few remarks under the above heading.

It is now nearly forty years since Colonel Sykes's paper* on "the Fishes of the Dukhun" appeared in the 'Transactions of the Zoological Society,' in which the author alluded to forty-six species, remarking that no less than forty-two were new to science.

Dr. Bleeker, in his paper "Beng. en Hind.," gives a list of these fishes, and places them in the genera to which he then considered they belonged. Jerdon (M. J. L. & Sc.) also remarked on a few, expressing his regret that Valenciennes, in the grand 'Histoire Naturelle des Poissons,' had omitted all reference to Col. Sykes's paper.

Dr. Günther, in the 'Catalogue of Fishes in the British Museum,' thus disposes of Sykes's forty-two new species:—six new, eleven previously known, twenty doubtful or omitted, five the genus doubtful.

The only record which I have yet discovered at the India Office respecting Sykes's collection is the following note of presentation:—"July 15th, 1831. Fish, insects, and reptiles in spirit 117;" also "drawings of fish twenty-nine," which being one more than

* Paper read Nov. 27, 1838.

were published, is probably due to the *Cyprinus nukta* having been omitted. No notice of the gift of skins of fish can be discovered. That they may have existed appears probable from the following passage in his paper under the head of *Cyprinus nukta*:—"Both Mr. Rüppell and Mr. Yarrell, who have done me the favour to look over my fishes, express their belief that the present fish is only a monstrosity of *C. auratus*" (p. 355).

The next officer who examined some of the fishes of these parts was Dr. Wyllie (see Proc. Zool. Soc. 1840, p. 34), who was struck with the accessory branchial sacs of the *Saccobranchus singio*, which he considered were "perhaps intended for reservoirs of water to enable the animal during its migrations from tank to tank to maintain the gills in a constantly moist condition. They may also perhaps serve, in ordinary circumstances, as an extension of the respiratory surface; and the numerous blood-vessels that are seen in their coats would tend to give a probability to such a conjecture. They are of loose cellular texture, of a whitish grey colour, speckled with numerous minute black points; they are traversed from one extremity to the other by a blood-vessel of considerable size, into which numerous small branches open at right angles."

I believe Dr. Wyllie to have been correct in the last part of his observation, that this sac or sacs (which extend backwards from the gill-cavity, amongst the muscles on either side of the neural spines) are receptacles for air, that air is taken in by a constricted orifice existing between the superior and the next branchia, and that the single blood-vessel is employed in returning arterial blood to the general circulation, it having been oxygenated in the air-sac*. It appears to pass to the lowest branchial arch; but I must leave this subject for a future paper. Irrespective of this air-sac, an air-vessel or air-bladder enclosed in bone exists, and is connected by a tube with the pharynx, as is usual in the *Physostomi*.

Since then Col. Playfair has received some specimens from Poona, which have been deposited in the British Museum. Personally I have collected in the Kistna and its affluents at Kurnool, Bezwada, and Masulipatam, also in the Godavery from Rajahmundry to its mouth. I have also obtained a few species from the Nerbudda at Jubbulpore, from the tanks at Hurdah, and had a collection made for me at Poonah and in its vicinity.

* These fishes take in and blow out globules of air.

1. *AMBASSIS RANGA* = *Chanda ranga*, *H. B.*; *C. lala* (young), *H. B.*; *Ambassis Barlovi*, *Sykes*, *Bleeker*, *Jerdon*; *A. alta*, *C. V.*; *Chanda* (*Ambassis*) *ruconius*, *M'Clelland*.

Sykes, as can be seen on his original drawing, referred this fish to *Hamilton Buchanan's* species.

2. *GObIUS GIURIS*, *Ham. Buch.*

This species may be thus subdivided:—(1) *G. giuris*, *H. B.*, *Bleeker*, = *G. catebus*, *C. V.*; *G. spectabilis*, *Günther*. (2) *G. koramottah*, *Russell*, = *G. kora*, *C. V.* (3) *G. bullee-kokah*, *Russell*, = *G. kurpah*, *Sykes*; *G. Russellii*, *C. V.*; *G. platycephalus*, *Peters*.

“*Ooloo-way*, *Tamil*; *Ooskia denta*, *Telugu*; *Balloo seekdah*, *Hind.*”

3. *OPHIOCEPHALUS MARULIUS*, *Ham. Buch.*

This is not *Sykes's* fish, of which, however, I have specimens from the *Malabar coast* and *Canara*. The *O. marulius* appears to invariably possess an ocellus on the base of the caudal fin, which is absent in the second species.

4. *O. LEUCOPUNCTATUS*, *Sykes*, *Bleeker*, = *O. grandinosus*, *C. V.*

The original drawing of *Valencienne's* species was brought from *China*; and the further remark occurs, “*là retrouvée dans le Maïssour*,” whence *Dussumier* brought a fine specimen. *Sir John Richardson* (*Ich. China*, p. 252) observes of *Cuvier & Valenciennes's* species, “*described from a painting executed in China*;” whereas it is most distinctly stated that the description was drawn up from *Dussumier's* specimen, not from the drawing. *Dr. Günther* locates the species, “*Fresh waters of China; river Maïssour*.”

Not long since I visited the unrivalled and beautifully kept ichthyological collection in the *Jardin des Plantes* at *Paris*, which is freely opened to those who wish to study its treasures. *Dr. Sauvage* was good enough to show me the type specimen of *O. grandinosus*, *C. V.*, labelled as having been obtained in *Malabar* by *Dussumier*. The *Maïssour* is probably the *Maisur* or *Mysore* country, from which some of the rivers on the western coast of *India* were believed to have their origin. I also saw in the fine collection at *Berlin* a specimen received from the *Paris Museum* with the locality given as *Malabar*. The *Madras Museum* has also received it from the *Coromandel coast*; and it is probably the *Ophiocephalus* termed *sowarah* by *Russell* (*Fish. Viz. pl. 163*). Of

course, because it is found in India, such is no reason against its also being in China, as seen in *O. gachua*, H. B.

5. *OPHIOCEPHALUS GACHUA*, Ham. Buch.

One of the specimens is tinged with orange. When in Assam I obtained some of these fishes from near Goalpara, where the *O. aurantiacus*, H. B., came from. All were more or less spotted and marked with yellow about the head. I have received this widely distributed species from Major Miles, who captured it in the river Kej, near Gwadur, in Beloochistan. It is also found in Afghanistan.

6. *MASTACEMBELUS ARMATUS*, Lácep.

Is the same as Sykes's species. I obtained the *M. pancalus*, H. B., at Jubbulpore, and also as high up the Brahmapootra in Assam as Debrooghur. The variations which this spined eel undergo are very remarkable: the fin-rays are usually D. 25-26/30-40, A. 3/31-38; in Upper Assam I found the fin-rays D. 26/42, A. 3/46, and a few vertical bands on the body. In Burmah the banded *M. zebrinus*, Blyth, appears to supersede it; still it is worthy of inquiry whether such is not only a local form: it has D. 28-29/50-52, A. 3/51-56. There are twenty rows of scales between the lateral line and the commencement of the soft dorsal fin instead of eighteen, as seen in the *M. pancalus*. To illustrate how widely the number of fin-rays differs in fish of this genus, I have received a *M. unicolor* from the Berlin Museum with D. 33/94, A. 3/98, the formula usually given being D. 33-34/80-84, A. 3/75-81. In the *M. armatus* the variations in the number of the fin-rays are likewise considerable. It is termed at Hingolie "Aral, Tamil; Panpura, Telugu; Baum, Hindostanee; Wām, Mahratta."

7. *MACRONES AOR*=*Pimelodus aor*, H. B.; *Platystoma seenghala*, Sykes; *Bagrus seenghala*, Bleeker & Jerdon.

"Karlee kelletee, Tam.; Waldee, Hind."

8. *M. CAVASIUS*=*Pimelodus cavasius*, Ham. Buch.; *Pimelodus seengtee*, Sykes; *Bagrus seengtee*, Bleeker.

"Topa kelletee, Tam.; Chinnah jellah, Tel.; Chota katerna, Hind."

9. *RITA KUTURNEE*=*Phractocephalus kuturnee*, Sykes; *Pimelodus? kuturnee*, Bleeker; *Bagrus kuturnee*, Jerdon.

This species of *Rita* has no posterior prolongation of its air-

vessel. "*Hathoo kelleetee*, Tam.; *Code jellah*, Tel.; *Burah kurturnee*, Hind."

10. RITA GOGRA = *Phractocephalus gogra*, Sykes; *Pimelodus?* *gogra*, Bleeker; ? *Arius pavimentatus*, Val.*; *Pangasia?* *gogra*, Jerdon; *Gogrius Sykesii*, Day.

I have taken this fish in the Kistna at Kurnool, and also received it from Poona.

11. PSEUDEUTROPIUS GOONGWAREE = *Hypophthalmus goongwaree*, Sykes; *Bagrus exodon*, Val.; *B. goongwaree*, Bleeker & Jerdon.

Although this species is not in Dr. Dobson's collection, I have obtained it in the Deccan.

12. PS. TAAKREE = *Hypophthalmus taakree*, Sykes; *Bagrus taakree*, Bleeker & Jerdon; *Pseudentropius longimanus*, Günther.

13. CALLICHOUS BIMACULATUS = *Silurus bimaculatus*, Bloch.

This may be *Schilbe pabo*, Sykes, = *Wallago pabo*, Bleeker; *Silurus pabo*, Jerdon. The *C. bimaculatus* is the common Deccan form, but it has rarely above 66 anal rays; whilst Sykes states A. 68-70, and may refer to *C. checkra*, Ham. Buch., also found in the Deccan. "*Chowallay*, Tam.; *Tedwah*, Tel.; *Poptah*, Hind.; *Goomgulah*, Mahr."

14. WALLAGO ATTU = *Silurus athu*, Bl.; *Schilbe boalis*, Sykes; *Wallago Russellii*, Bleeker; *Silurus boalis*, Jerdon.

"*Wallay*, Tam.; *Walgoo*, Tel.; *Podom*, Hind."

15. SILUNDIA SYKESII, n. s. ?? = *Ageneiosus Childreni*, Sykes, Bleeker, & Jerdon.

B. xii., D. $\frac{1}{7}/0$, P. $\frac{1}{12}$, V. 6, A. $\frac{2}{42-48}$, C. 17.

Length of head $5\frac{1}{4}$, of caudal $4\frac{2}{3}$; height of body $5\frac{3}{4}$ i. i. the total length.

Eyes with a narrow, free, adipose lid, diameter $3\frac{1}{2}$ in length of head, 1 diameter from end of snout and $1\frac{1}{3}$ apart. Anterior nostril on front edge of snout, the posterior oval and patent, more in the mesial line of the head. Lower jaw slightly the longer, curved upwards in the middle; snout rather broad. *Barbels*—the maxillary ones extend nearly, or quite, to the base of the pectoral fin; the mandibular ones are thin and as long as the diameter of the eye. *Teeth* cardiform in the jaws; in a crescentic band on the palate. *Fins*—dorsal spine weak, rugose anteriorly, finely serrated posteriorly, and as long as the

* Valenciennes does not mention the dark fins so well marked in this species; but as his specimen was upwards of a foot long, it cannot be the young of *Pimelodus rita*, H. B.

head excluding the snout; pectoral spine stronger, as long as the head behind the angle of the mouth, and reaching to above the ventral; ventral arises behind the vertical from the posterior dorsal rays, and reaches the anal; caudal lobed, the lower lobe somewhat the longer. *Air-vessel* transverse, not enclosed in bone. *Colours*—bluish superiorly, becoming white beneath, the fins stained externally with grey. Two specimens up to $6\frac{1}{2}$ inches in length.

I have one from Kurnool nearly 9 inches long.

Sykes states that this fish is termed *Purree* (Mahr.) and *Sillun* in the Deccan, that it is *without cirri*, and also that the first bony ray is “serrated on the anterior edge,” such being also shown in the figure. This last observation leads me to believe that he described from the drawing, which seems to have maxillary barbels indistinctly marked.

The long maxillary barbels of this species at once serve to distinguish it from the *S. gangetica**, C. V.

I am unable to admit that the existence of mandibular barbels in this species is a valid reason for instituting a new genus for its reception:—*Silundia Sykesii* has long maxillary and also mandibular barbels; *S. gangetica*, maxillary but no mandibular barbels. If these *Silundia* are considered generically distinct, so must the *Hemipimelodus itchkeea*, Sykes, from the genus in which I have placed it, as it possesses eight instead of six barbels. Likewise another Deccan fish, *Nemacheilus Evezardi*, Day, which has eight instead of the normal six barbels, would require a genus to itself. This opens too wide a question to enter upon in this place; but if the foregoing views are correct, it follows that the genus *Lepidocephalichthys*, Bleeker (divided from *Cobitis* on account of its having eight instead of six barbels), must be suppressed. In *Barbus* it is generally admitted that those with four, two, or without barbels, belong to one genus. I have also found two species of *Rohtee* with barbels, a genus considered to be without any.

* 15 a. SILUNDIA GANGETICA, n. s.

B. xii., D. $\frac{1}{7}$ /0, P. $\frac{1}{13}$, V. 6, A. $\frac{4}{8}$, C. 19.

Length of head $5\frac{1}{4}$, of caudal 6; height of body $5\frac{1}{4}$ in the total length. *Eyes*—diameter $4\frac{1}{2}$ in length of head, $1\frac{1}{4}$ diameter from end of snout, and 2 apart. Width of head equals its length, excluding the snout, whilst its height is rather less. A pair of maxillary barbels about as long as the eye, no mandibular ones. *Fins*—dorsal spine as long as the head, excluding the snout, almost smooth anteriorly, serrated posteriorly. This species so closely resembles the other two, that a further description appears unnecessary.

Habitat. The rivers of Bengal and Burma. It attains a large size.

16. HEMIPIMELODUS ITCHKEEA = Phractocephalus itchkeea, *Sykes*; *Bagrus itchkeea*, *Bleeker*; *Pimelodus itchkeea*, *Jerdon*; *Macrones itchkeea*, *Günther*.

D. $\frac{7}{10}$, P. $\frac{1}{8}$, V. 6, A. $\frac{3}{10}$, C. 17.

Length of head 5, of pectoral 5; height of body 6 in the total length.

Eyes—diameter $\frac{1}{3}$ of length of head, 1 diameter from end of snout, and also apart. Snout overhanging the mouth, upper jaw the longer. Upper surface of head rugose. Occipital process four times as long as wide at its base; the lateral occipital process curves rather outwards and downwards. Humeral process pointed and as long as the head, excluding the snout. The superior longitudinal groove extends to the base of the occipital process. *Barbels* eight, the maxillary pair longer than the head. *Teeth* villiform in both jaws, none on the palate. *Fins*—dorsal spine smooth, its length equal to the distance between the anterior nostril and the posterior end of the head; pectoral spine serrated internally; ventrals commence behind the vertical from the last dorsal ray; caudal deeply forked. *Air-vessel* in two lobes, rather large, and visible on the sides of the shoulder below the skin. *Colours*—yellowish-bronze, becoming silvery on the abdomen; three dark blotches over the head, and four more over the back, descending as low as the lateral line; a black edging to the caudal, and a black blotch on either lobe; a dark mark on the dorsal fin.

This species and *H. cenia*, H. B., are very similar; but the *itchkeea* has eight instead of six barbels, whilst its air-vessel is only partially surrounded by bone.

I have specimens from Poonah; but it is not included amongst Dr. Dobson's fish.

17. BAGARIUS YARRELLII = *Pimelodus bagarius*, H. B.; *Bagrus Yarellii*, *Sykes*, *Bleeker*; *Bagarius Buchanani*, *Bleeker*; *Pimelodus Yarellii*, *Jerdon*.

18. GLYPTOSTERNUM LONAH = *Bagrus lonah*, *Sykes*; *B. lona*, *Bleeker*; *Pimelodus lonah*, *Jerdon*; *Glyptosternum dekkanense*, *Günther*.

“*Korah muttah*, Tel.”

19. BELONE CANCILA = *Esox cancila*, H. B.; *Belone Graii*, *Sykes*, *Bleeker*, & *Jerdon*.

This species I have obtained in the Deccan.

20. DISCOGNATHUS LAMTA = *Cyprinus lamta*, H. B.; *Chondrostomus mullya*, *Sykes*, *Bleeker*.

This is by no means a rare fish in the Deccan; Dr. Dobson has sent seven specimens; I have taken it in numbers from the Kistna. *Sykes's* figure gives a far better idea of this fish than

does his description. The transverse process on the upper lip, which he mentions, is better seen in specimens from the neighbourhood of hilly districts than in those confined to the plains. *Chondrostoma wattanah*, Sykes, is stated to belong to Hamilton Buchanan's *Garra* division of the genus *Cyprinus*; but the figure does not give one that impression. It may possibly be intended for the young of *D. lamta*.

21. CATLA BUCHANANI, *C. V.*, = *Cyprinus catla*, *H. B.*; *Cyprinus abramioides*, *Sykes, Jerdon*; *Leuciscus abramioides*, *Bleeker*.

This fish is by no means uncommon in the Kistna, where it attains a considerable size*. Sykes remarks that its flesh is firm, sweet, and agreeable, that the fish is highly esteemed, and appeared to him to be the most valuable of the carps of India; M'Clelland, that there is no species of more importance than this in an economic point of view, and wonders why it has been so long overlooked by our epicures; and he observed that it extends to Upper Assam. I found it in Burma, and when last in Paris saw a beautiful large stuffed specimen from Siam.

22. LABEO FIMBRIATUS, *Bloch*, = *Varicorhinus bobree*, *Sykes*; *Leuciscus? bobree*, *Bleeker*.

There are six specimens of this widely spread species.

23. L. ROHITA = *Cyprinus rohita*, *H. B.*

24. L. POTAIL = ? *Cyprinus potail*, *Sykes, Jerdon*; *Leuciscus potail*, *Bleeker*.

D. 3/10, *P.* 17, *V.* 9, *A.* 2/6, *C.* 19, *L.* 1. 40, *L. tr.* 8/11.

Length of head 5, of caudal 4; height of body $3\frac{1}{2}$ in the total length. *Eyes*—diameter $\frac{1}{6}$ of length of head, 3 diameters from the end of snout. Dorsal profile much elevated, the abdominal nearly horizontal; snout overhanging the mouth, which is inferior and has a slight lateral lobe; lower labial fold distinct. Fine pores on the upper surface of the head, snout, and along the cheeks, being most developed on the snout. A pair of maxillary barbels of medium length. *Fins*—dorsal commences midway between the snout and the posterior extremity of the base of the anal fin, its upper edge concave, the height of the fin two thirds of that of the body; pectoral nearly as long as the head, its length equalling that of the ventral; anal much highest ante-

* In 'Nature,' December 9, 1875, is a note from Mr. Mitchell, showing the rapidity with which this fish grows. Having had a tank dug near Calcutta (65 × 58 feet and 13 deep), he placed in it some fry from $\frac{1}{2}$ to 1 inch in length (this occurred in May); after four months it was netted, one of the largest weighed 14 oz., and was 11 inches long; the others were only 1 or 2 oz. lighter.

riorly; caudal deeply forked, the upper lobe the longer. *Lateral line*, $5\frac{1}{2}$ rows between it and the base of the ventral. *Colours*—greyish, each scale with a red lunule; fins stained grey along their edges, and dorsal also along its centre.

I have a specimen 10 inches long from Poonah.

25. *L. BOGGUT* = *Chondrostoma boggut*, Sykes, Bleeker; *Tylognathus striolatus*, Günther.

One specimen. I have also obtained it from Poonah, Jubbulpore, and other places.

26. *L. NUKTA* = *Cyprinus nukta*, Sykes, Jerdon; *Carassius auratus*? (monstrosity), Bleeker.

This species I have already described (J. A. S. of Bengal, 1872, p. 319), when I showed that it was not the *Carassius auratus*, but a true *Labeo*. Dr. Dobson has sent one small specimen from the Kistna. I obtained some larger ones from Poonah through the assistance of Col. Everard. The *C. auratus* is only found in the domesticated form in India and Burma; but Dr. Anderson brought back a number from the first expedition to Yunnan, all of a dull green colour.

27. *CIRRHINA KAWRUS* = *Chondrostoma kawrus*, Sykes, Bleeker, Jerdon.

D. 3/9-10, P. 19, V. 9, A. 2/5, C. 19, L. 1. 36-38, L. tr. $6\frac{1}{2}/7$.

Length of head 6, of caudal $4\frac{3}{4}$; height of body 5 in the total length.

Eyes—diameter $3\frac{1}{2}$ - $3\frac{3}{4}$ in length of head, $1\frac{1}{2}$ diameter from end of snout, and $1\frac{2}{3}$ -2 apart. Dorsal and anal profiles equally curved and low. The width of the head equals its length without the snout, whilst its height is slightly more. Upper jaw the longer; lips not fringed, a tubercle above the symphysis of the lower jaw. A few pores on snout, or else absent. *Barbels* absent, or a rudimentary maxillary one. *Fins*—dorsal commences midway between the snout and the posterior end of the base of the anal fin, it is nearly as high as the body; pectoral almost as long as the head; ventral commencing on a vertical line below the hind branched ray of the dorsal fin, it reaches rather above halfway to the vent; anal does not reach the caudal when laid back; caudal deeply lobed. *Scales*, 14 or 15 rows before the dorsal fin; $4\frac{1}{2}$ rows between the lateral line and the base of the ventral fin. *Lateral line* with a very slight curve. *Colours*—silvery, with some dark spots near the shoulder; dorsal and caudal fins edged with grey; pectoral, ventral, and anal reddish.

Sykes's figure, if intended for this species (which appears to be otherwise undescribed and common in the Deccan), shows the eye

too small. He observes on its having no lateral line, but qualifies this assertion by saying "lateral line very rare, and, when occurring, obscure."

28. *C. FULUNGEE*=? *Chondrostoma fulungee*, Sykes, Bleeker.

This species I have received from Poonah, and described in the 'Journal of the Asiatic Society of Bengal, 1872, p. 321.

29. *MOLA SANDKHOL* = *Leuciscus sandkhol*, Sykes, Bleeker, Jerdon ;
Leuciscus harengula, Cuv. & Val.

This fish, of the genus *Thynnichthys*, Bleeker, is found in both the Kistna and Godavery rivers almost to their terminations. I have not taken it in Burma.

30. *M. BUCHANANI*, or *Cyprinus mola*, H. B.

Is found throughout the Decan, and may be identical with *Leuciscus chitul*, Sykes, Bleeker, Jerdon ; but if so, the number of fin-rays has been given incorrectly.^a

31. *BARBUS SARANA*, H. B., = *B. khudree*, pt., Sykes, Bleeker, Jerdon.

32. *B. (BARBODES) DOBSONI*, sp. nov.

D. 4/9, A. 8, L. l. 32, L. tr. $5\frac{1}{2}/5\frac{1}{2}$.

Length of head 6, of caudal $4\frac{1}{2}$, height of body $3\frac{1}{2}$ in the total length.

Eyes—diameter $3\frac{1}{3}$ in length of head, nearly one diameter from end of snout, and $1\frac{1}{2}$ apart. Dorsal profile rather elevated; snout a little obtuse. The greatest width of the head equals its length behind the middle of the eye. Mouth horseshoe-shaped, the lower labial fold interrupted in the middle. Upper jaw overlaps the lower; the maxilla reaches to below the front edge of the eye. *Barbels* thin; the maxillary ones as long as the eye; the rostral ones somewhat shorter. *Fins*—dorsal commences midway between the snout and the base of the caudal, its last undivided ray articulated and $\frac{2}{3}$ as high as the body; pectoral nearly as long as the head, not reaching the ventral, which latter extends $\frac{2}{3}$ of the way to the base of the anal; anal does not quite reach the base of the caudal, which latter is deeply forked. *Scales*, $2\frac{1}{2}$ rows between the lateral line and the base of the ventral fin. *Lateral line* complete. *Colours*—bluish above, lighter below; the fins edged with grey.

Sykes has *B. khudree*, composed, I believe, of two species—one with "blood-stained fins" (*B. sarana*), and his variety with "the fins tipped with bluish instead of red" (or the fish now described). Both species exist in this collection; but Sykes observes of the undivided dorsal rays, "the whole four compact" or unserrated, which would be correct for *B. Dobsoni*, but not for *B. sarana*;

whilst the remainder of his description agrees with this latter species. *B. sarana* is termed "*Kunnum*, Tel.; *Rhhoo*, Hind.; *Wadis*, Mahr."

33. *BARBUS TOR*, *H. B.*, =? *B. mussulah*, pt. *Sykes*, *Bleeker*, *Jerdon*.

Sykes's specimen of this fish in the British Museum has been referred by Dr. Günther to *B. tor*; but he gives *B. khudree*, Sykes, as a synonym, but not *B. mussulah*, Sykes. However, in P. Z. S. 1872, p. 877, Dr. Günther further observes, "Although not the true names (if any) were attached to the bottles when they were transferred to the Museum, the name of Colonel Sykes was written on the labels; and I still believe the specimens to be typical."

B. khudree, however, is a species which, Sykes observes, only attains to 1½ foot in length. He also states having seen the *B. mussulah*, 3 feet 4 inches in length, and weighing nearly 42 lb., and that the papillæ on the cheeks are not constant. The *B. tor* appears to be found all through the Deccan. There are nine specimens in this collection; they are named "*Sanu candee*, Tam.; *Tella purka*, Tel.; *Sufeed khowl*, Hind.; *Bhud gall*, Mahr."

34. *B. KOLUS*, *Sykes*, = *Capoeta kolus*, *Bleeker*; *B. Guentheri*, *Day*.

There are ten specimens of this fish in the collection; it appears to extend its range to the mouth of the Kistna river. "*Challa candee*, Tam.; *Pinedoo*, Tel.; *Koodwah*, Hind.; *Aurool*, Mahr."

35. *B. STIGMA*, *H. B.*

36. *B. TICTO*, *H. B.*, = *Rohtee ticto*, *Sykes*; *Systemus ticto*, *Bleeker*, *Jerdon*.

37. *B. COSUATIS*, *H. B.*, = *Rohtee pangut*, *Sykes*; *Systemus pangut*, *Bleeker*.

I have taken this species at Hurda and in Bombay, but only up to 3 inches in length. Sykes observes his fish attains to 5 inches.

38. *RASBORA DANICONIUS*, *H. B.*

39. *ASPIDOPARIA MORAR*, *Ham. Buch.*, = *Leuciscus morar*, *Sykes*, *Bleeker*.

40. *ROHTEE ALFREDIANA*, *Cuv. et Val.*

41. *R. VIGORSII*, *Sykes*, = *Systemus Vigorsii*, *Blkr.*; *Abramis Vigorsii*, *Jerdon*; *Osteobrama rapax*, *Günther*.

Five specimens. This fish is taken as low as the mouth of the Kistna.

42. R. OGILBII, *Sykes*, = *Systemus Ogilbii*, *Blkr.*; *Abramis Ogilbii*, *Jerdon*.

I have this species from the Kistna.

43. BARILIUS COCSA, *H. B.*

44. DANIO OSTEOGRAPHUS, *M^c Clelland*.

There are two specimens of this fish in the collection; they are of the variety which has the maxillary barbels deficient. I have seen similar ones from Seebagor, presented to the Calcutta Museum by S. E. Peal, Esq. In this genus but little stress can be laid on the existence or absence of barbels.

45. CHELA BACAILA, *Ham. Buch.*, = ? *C. teekanee*, *Sykes*; *Leuciscus teekanee*, *Blkr.*; *Perilampus teekanee*, *Jerdon*.

Thirteen specimens in the collection.

46. C. PHULO, *H. B.*, = ? *C. Oweni*, *Sykes*; *Leuciscus Oweni*, *Blkr.*; *Pelecus Oweni*, *Jerd.*

Several specimens. I have also taken it in the Kistna.

47. C. CLUPEOIDES, *Bl.*, = ? *C. balookee*, *Sykes*; *Leuciscus balookee*, *Blkr.*; *Pelecus balookee*, *Jerdon*.

This species is found in the Deccan.

48. COBITIS GUNTEA, *H. B.*, = *C. maya*, *Sykes*, *Bleeker*, *Jerdon*.

This species is found throughout the Deccan.

49. NEMACHEILUS RUPPELLI = *Cobitis Ruppelli*, *Sykes*, *Bleeker*, *Jerdon*.

I have received what I believe to be this species from Poonah (see J. A. S. of Bengal, 1872, pt. 2, p. 184).

50. N. BOTIA = *Cobitis botia*, *H. B.*

One specimen, having the preorbital projection well developed.

51. NOTOPTERUS KAPIRAT, *Bonn.*, = *Mystus badgee*, *Sykes*; *Notopterus bontianus* (*C. V.*), *Bleeker*.

Of this there are seven specimens in the collection. "*Chota wallay*, Tam.; *Chuppul mutche*, Hind.; *Chumbaree*, Mahr."

52. ANGUILLA BENGALENSIS, *Gray & Hardwicke*, = *A. Elphinstonei*, *Sykes*, *Bleeker*, *Jerdon*.

This species I have taken in the Deccan.

It now remains to briefly enumerate such species of Sykes as have not yet been alluded to.

53. CHELA JORAH, *Sykes*, = *Leuciscus jora*, *Bleeker*, *Jerdon*.

D. 10, A. 11.

This is perhaps *Chela gora*, H. B.

54. C. ALKOOTEE, *Sykes*, = *Leuciscus alkootee*, *Bleeker*, *Jerdon*.

Appears to be a young fish, and is one which I am unable to recognize.

55. NEMACHEILUS MOREH = *Cobitis moreh*, *Sykes*, *Bleeker*, *Jerdon*.

D. 12, A. 7.

I have not as yet obtained a Loach from the Deccan that corresponds to this description.

The following sixteen species* I consider were unknown when Sykes described them:—*Ophiocephalus leucopunctatus*, **Rita kurturnee*, *R. gogra*, *Pseudeutropius goongwaree*, **P. taakree*, **Hemipimelodus itchkeea*, **Glyptosternum lonah*, *Labeo potail*, *L. boggut*, *L. nukta*, *Cirrhina kawrus*, *C. fulungee*, *Mola sandkhol*, **Barbus kolus*, *Rohtee Vigorsii*, **R. Ogilbii*.

Irrespective of the foregoing is the question whether the *Silundia* I have described as new may not be Sykes's species; I have therefore named it after him.

Before concluding this paper, I wish to draw the especial attention of pisciculturists in this country to one of the species I have mentioned—*Barbus tor*, or the Mahseer of India. This fish is well known not only for the sport it affords the angler, but also for the excellence of the flavour of its flesh. It attains to a size equalling, or even surpassing, that of the Salmon, but, unlike the latter fish, never enters salt water. It deposits its ova, which are small, as far as it can force its way up hill-streams, and consequently would not run the risks to which Salmon are exposed when entering fresh water or returning to the sea.

The Mahseer is a Barbel as easy to convey from place to place as the Chinese Gold Carp; but it can only be ascertained by actual experiment whether it will thrive in this country. It is found in most of the large rivers of India and Sind, attaining its greatest size when living in those which have alpine sources.

I may mention that in an ichthyological point of view the Indian rivers may be divided into those of the plains as distinguished from such as have their origin in the hills. The hill-rivers consist (1) of those which have alpine sources, and (2) those which do not possess them. The Mahseer evidently thrives best in those

* The six with an asterisk before them are those which are recognized in the B.M. Catalogue as unnamed previous to Sykes's paper.

streams which have alpine sources. No doubt fine fish of this species are captured in the Nerbudda, Kistna, Godavery, and other rivers of the plains; but the largest supply exists in the Ganges and Jumna, or those descending from the Himalayas. The rivers which have their origin in the Himalayas have, exclusive of springs, two great sources of replenishment:—first (during the hot months), from the melting of the ice and snow near their sources; secondly, by the rains which during the monsoon-time assist in and increase this melting.

The breeding-season is during the moonsoon-months, when the rains occasion sudden floods in the hill-streams, at which period their subsidence is often as rapid as their rise; consequently fishes ascending to breed have to complete that operation as quickly as practicable, or a sudden subsidence of the river may cut off their return to the plains. Whether due to some deleterious action of snow-water, or more probably to the force of these snow-fed currents, Indian Carps, as a rule, do not deposit their ova in the main stream, but in the side affluents. Having effected this, the parent fish rapidly descends to the main river, and that of course before the appearance of the fry. The young fish are rarely hatched out in sufficient time to be able to descend to the rivers of the plains, and are consequently detained until the next floods, when they are stronger and more able to avoid their persecutors than they would be if they entered the main stream immediately they were hatched. Their growth is at first slow, probably from want of sufficient nourishment; but on the return of the rains they rapidly increase in size, and then descend to the main rivers.

Remarks on the Insects of Kerguelen's Land*.

By H. N. MOSELEY, M.A., Naturalist to H.M.S. 'Challenger.'

"THE insects we found at Kerguelen were two apterous flies, one as large as a house-fly, the other almost as big as a blow-fly, an apterous gnat (*Culex*) and a winged gnat, a small apterous (or rather very short-winged) moth, two or three beetles (*Curculio* and *Staphylinidæ*), and three or four spiders (*Saltici* and a *Trombidium*).

"The moth I found crawling upon the beds of the little *Juncus*. The gnats are to be found about the dead seaweed &c. on the seashore. The larger fly nestles at the base of the leaves of *Pringlea*,

* This communication is an extract from a letter addressed to Dr. Hooker, chiefly concerning the Plants of Kerguelen, and already published by the Society in their Journal, Botany, No. 82, vol. xv. p. 53. Its zoological bearings, however, may there be lost sight of; hence its present reproduction.—ED.